WRITTEN EMOTIONAL EXPRESSION AND HEALTH:

EFFICACY OF TREATMENT IMPLEMENTATION VIA EMAIL

A Senior Honors Thesis

by

ERIN LEIGH BROWN

Submitted to the Office of Honors Programs
& Academic Scholarships
Texas A&M University
in partial fulfillment of the requirements of the

UNIVERSITY UNDERGRADUATE
RESEARCH FELLOWS

April 2002

Group: Psychology I

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April 2002

Group: Psychology I

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16

ABSTRACT

Written Emotional Expression and Health:

Efficacy of Treatment Implementation Via Email. (April2002)

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Studies examining the impact of written emotional expression on health have demonstrated repeatedly that writing about emotional experiences produces positive health effects compared to writing about non-emotional topics. The present study investigated whether administering writing assignments over email instead of having participants come in to the lab to write as in previous studies would produce health benefits. Individual differences between participants were also examined, but were not found to impact treatment effectiveness. Participants in the treatment condition exhibited better health outcomes overall than participants in the control condition. The study's results suggest that even when administered through e-mail, the emotional writing treatment produces positive health outcomes.

To my parents

I didn't have to think about who I wanted to dedicate this to,
but I had trouble coming up with what to say.

I must have typed and erased the contents of this page fifteen times.

It just kept coming out like one of those sappy Hallmark cards with the flowers and
poetry and in-laid gold calligraphy.

You know how we like those.

So just imagine one of those,
sans the cheesiness,
but with all of the genuine gratitude and love.

And insert that sentiment right here.

Thanks for everything. It's a cliché, but words really aren't enough
to tell you how much I love you and how lucky I feel to have you as my parents.

I have tears in my eyes, too.

Acknowledgments

The nice thing about "Acknowledgements" is that, unlike Academy Awards acceptance speeches, you can skip them. That said, I'd prefer that you didn't, because the people I'm thanking deserve a lot more thanks than a few paragraphs like this can provide. But I'm still going to write the few paragraphs!

This thesis would not have been possible without my wonderful faculty mentor, Dr. Bill Graziano. When I went to Dr. Graziano at the beginning of the spring semester of my junior year to ask him if I could take one of his graduate level classes for honors credit, he was glad to sign the forms to let me do so. While I was in his office, I mentioned that I had been thinking about doing a senior honors thesis, and I was wondering if he would be my advisor. I didn't know this, but he'd been advising honors fellows for years, and he suggested that I join his research team to gain research experience. I joined his team and took his grad class about research methods, and along the way, came up with an idea for this project, thanks in large part to Brad Sheese, one of Dr. Graziano's grad students. Brad showed me some abstracts about written emotional expression and health, and I immediately knew that a study of that sort would be perfect for my project, particularly since I'm hoping to go to medical school. Brad has been indispensable throughout the whole project, from its inception to its conclusion, though that conclusion had not quite come yet: we ran more subjects in the spring semester and were unable to include their data in this paper, so we intend to write the entire thing up (including the data that is included here, from the fall semester, as well as

data not included here, from the spring semester) after I've graduated and submit it to a professional journal for publication. We've already had a poster accepted to the American Psychological Association's 2002 convention.

Others have been a part of this undertaking, as well. I was fortunate to be part of a research team that helped me out with actually running the project. During the fall of 2001 and spring of 2002, Ashley Barnes, Josh Cartier, Cara Garcia, Megan McGriff, Allison Smith, Alisa Barber, Kim Chapman, Robyn Grossnicklaus, Amanda Hernandez, Rebekah Lively, Charsy Robinson, Abby Schwab, and Shelly Smith proctored data collecting sessions, compiled data from weekly email surveys, scanned scantrons, and helped out in other ways. I wouldn't have been able to include so many subjects without their help.

TABLE OF CONTENTS

INTRODUCTION

That stressors can adversely affect physical and psychological health has long been recognized. Traditionally, stress has been dealt with in psychology through therapy, which generally involves the expression of emotion. This expression, which has a central role in both the study and practice of human psychology, has often been oral: the therapist encourages the individual experiencing problems to express his/her thoughts and emotions about the issues he/she is dealing with. This expression should lead to health benefits, both physical and mental.

In recent years, the role of *written* instead of verbal expression on health has been explored. Studies have repeatedly demonstrated that writing about emotional experiences produces positive health effects, as evidenced by indicators including reductions in physician visits (Greenberg & Stone, 1996), long-term immune and other serum measures (Pennebaker et al., 1988), and grade point average (Pennebaker et al., 1990). The exact mechanisms at work producing the beneficial effects are not yet known. Pennebaker and Seagal (1999) discuss three possible underlying mechanisms: (a) that by writing about their experiences, people become more health conscious and change their behavior accordingly; (b) that the value of writing lies in its allowing people to express themselves ("venting"); and (c) that the act of writing allows the person better to organize his/her cognitions on the traumatic experience, helping him/her to deal with it. There is little evidence to support either of the first two theories, but the

This thesis follows the style and format of the *Journal of Personality and Social Psychology*.

last one has been supported by examination of subjects' essays: Essays containing the most "cognitive" words were written by individuals who showed the most improvement. Further study may reveal more about the specific mechanisms involved in improving individuals' health via writing about emotional experiences.

Positive health outcomes have been found using a basic writing paradigm in which the research participant writes about traumatic experiences in his/her life. These health improvements have been found in diverse populations from professionals with advanced degrees (Spera et al., 1994) to maximum-security prisoners with sixth-grade educations (Pennebaker, 1997). Similarly, the treatment effect has been found across a wide range of personalities and individual differences. In fact, the only individual difference that has so far been shown to influence the treatment is hostility: Individuals high in hostility have been found to benefit more from the task than others (Christensen & Smith, 1993; Christensen et al., 1996).

The success of the writing treatment has lead to its widespread adoption in a variety of settings including hospices, outplacement facilities, support groups, and freshman orientations at major universities. In almost all cases, the writing assignments have been conducted in the lab, using pen and paper. The present study investigated whether administering writing assignments over email, instead of in the lab, would produce health benefits. If so, email administration, which requires fewer resources as well as possibly providing participants with a more comfortable atmosphere in which to write about their experiences, could be used in future implementations of the treatment.

METHOD

Subjects

Introductory psychology students (N=143) at Texas A&M University participated in this study in exchange for partial fulfillment of a course requirement.

Procedure

Participants attended one of several large, group sessions, during which they were informed that they might have to write about traumatic experiences. At these sessions, participants filled out the Pennebaker Inventory of Limbic Languidness (PILL) (Appendix A) and the SMU Health Questionnaire (Appendix B) to establish a baseline for later comparison. Email addresses of participants were obtained for future contact.

Individuals were randomly assigned to either the experimental (traumatic experiences) writing group or to the control (non-emotional) writing group. Participants were then emailed their writing assignments. Participants in the experimental group were given the following prompt for their first writing assignment:

> This is your first writing assignment. It is due tonight night by 8 pm. Your writing must be at least 500 words long. You are free to write as much as you want, as long as you write at least 500 words.
>
> Now, here is what you are to write about:
> I want you to write about the most traumatic and upsetting experience of your entire life. In your writing, I'd like you to really let go and explore your very deepest emotions and thoughts. You might tie your topic to your relationship with others, including parents, lovers, friends, or relatives, to your past, your present, or your future, or to who you have been, who you would like to be, or who you are now. You may write about the same general issues or experiences on all days of writing or on different traumas each day. All your writing will be kept completely confidential.

> This is a very serious task, and it is possible that you may become upset by it. If you do become upset or feel the need to talk to someone, please contact and receive assistance from Student Counseling Services at 845-4427 or the Helpline at 845-2700. We really appreciate your serious participation in this study. Your participation is very important to us, and we thank you again for being in our study.

Participants in the control group were given these instructions:

> This is your first writing assignment. It is due tonight by 8 pm. Your writing must be at least 500 words long. You are free to write as much as you want, as long as you write at least 500 words.
>
> Now, here is what you are to write about:
> For the next three days, you will be asked to write about nonemotional, primarily descriptive topics. You should write about the topic we provide you with on each day. For today, please write about what you have done so far today. Your writing may include where you've been, who you've seen, and what activities you have participated in. You should describe the specific events or objects in detail without discussing any of your own thoughts or feelings relating to the topic.
>
> Your writing should be at least 500 words long. It will be kept confidential.

Participants also received detailed instructions for how to obtain word counts of their writings.

On the two days subsequent, control group members were asked to write about their plans for the day and a movie which they'd recently seen. Experimental group members were asked to write about their traumatic experiences on all three days. All participants wrote once a day for three consecutive days.

After completing the writing tasks, all participants were emailed a survey every week that enquired about their health in the previous week. This survey is included in Appendix C. At the conclusion of the study, participants returned for another in-lab

session like the one they'd attended at the study's outset. They again filled out the PILL and the SMU Health Questionnaire.

Health and Behavior Measures

Weekly Email Health Surveys. This measure of health, unlike the previous four, was unique to this study. It asked participants five short questions about their health during each week following the treatment. This measure was included to reduce retrospective reporting errors on the part of participants.

Pennebaker Inventory of Limbic Languidness. This questionnaire asks subjects to rate, along 5-point scales ranging from "have never or almost never experienced the symptom" to "more than once every week", the degree to which they are currently experiencing several common symptoms or sensations.

SMU Health Questionnaire. This questionnaire asks subjects to indicate whether or not they have experienced any of 62 health problems during the previous year.

RESULTS

We hypothesized that participants in the treatment condition would show improved health outcomes (e.g., fewer bouts of illness, fewer visits to the doctor) relative to the control condition. Five separate dependent measures were created by aggregating the five responses to each question. The mean standardized (z-scored) aggregate responses for the treatment and control conditions are reported in Table 1. First, when all five questions were aggregated into a general health outcomes scale (standardized alpha = .81) the participants in the treatment condition exhibited marginally significant better health outcomes, $t(138) = 1.57$, $p = .06$) than participants in the control condition. Independent sample t-tests (1-tailed) were conducted to examine more closely the hypothesis that participants in the treatment condition exhibited significantly better health outcomes as indicated by lower rates of illness. Participants in the treatment condition reported being sick for significantly fewer days than participants in the control condition, $t(138) = 1.85$, $p = .03$), and were less likely to miss class due to an illness, $t(100) = 1.54$, $p = .06$. Participants in the treatment condition were not significantly different from participants in the control condition in the number of bouts of illness, $t(138) = .84$, $p = .20$, the number of times they took over the counter medication due to illness, $t(138) = .85$, $p = .20$, or the number of times they went to see a doctor, $t(138) = .53$, $p = .59$.

Differences were also found between control and treatment group members' scores on the Pennebaker Inventory of Limbic Languidness (PILL). Participants in the treatment condition reported better overall health outcomes on the PILL than did control

group members, t(138)=1.79, p=.038. The mean standardized (z-scored) aggregate responses for the treatment and control conditions are again reported in Table 1.

Table 1
Standardized Means and Standard Deviations by Condition

Weekly Email Surveys:		
Question #1: How many bouts of illness in the past week?		
Control	M: .087	SD: 1.015
Treatment	M: -.056	SD: .991
Question #2: How many classes have you missed due to illness in the past week?		
Control	M: .168	SD: 1.107
Treatment	M: -.108	SD: .913
Question #3: How many times have you taken over the counter medicine in the past week?		
Control	M: .089	SD: 1.023
Treatment	M: -.057	SD: .986
Question #4: How many times have you seen a doctor in the past week?		
Control	M: .055	SD: 1.270
Treatment	M: -.035	SD: .782
Question #5: How many days have you felt sick in the past week?		
Control	M: .192	SD: 1.183
Treatment	M: -.124	SD: .845
General Health Outcomes:		
Control	M: .164	SD: 1.156
Treatment	M: -.106	SD: .874
PILL:		
Sum of questions:		
Control	M: .064	SD: 1.156
Treatment	M: -.106	SD: .874

CONCLUSION

As in past studies that were conducted in the lab instead of over email, our results showed that participants who wrote about their traumatic emotional experiences were healthier in the weeks following the writing assignments than were those individuals who wrote about nonemotional control topics. As the "writing cure" is already being used in several settings, this knowledge is of practical importance.

Research directly comparing the efficacy of emailed writing assignments versus supervised in-lab writing sessions is still needed, for although this study successfully demonstrated that performing the writing tasks over email is effective, it may be that one of the implementations produces superior results. It is possible that by performing their writing assignments over email instead of in a supervised environment, participants do not take the assignments as seriously as if the writings are done in the lab. Perhaps actually being made to go in to the lab to write makes the entire experience more salient for participants, who then receive more health benefits.

Alternatively, participants who receive their writing "treatments" over email may benefit even more from the activity than do those who write in the lab. In an age in which practically everyone uses email on a regular basis (at least practically every college-age student who would be participating in such a study), typing thoughts and emotions is a commonplace, familiar activity. One could argue that many participants are actually *more* comfortable typing than writing. Also, when participants are allowed to perform their writing tasks over email, they have more flexibility about when and where they may choose to write. This, combined with the familiar interface of email,

may allow participants to really let go and explore their emotions more freely; it may even cause them to *want* to participate more openly and sincerely, which is highly desirable.

For these reasons, more studies utilizing email instead of pen and paper are needed, as are studies comparing the two implementations. The fact that the treatments do work over email is noteworthy, though, for it makes future emotional writing studies easier to carry out for the individuals giving the assignments, as well as possibly for the participants.

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APPENDIX A

The Pennebaker Inventory of Limbic Languidness (PILL)

Several common symptoms or bodily sensations are listed below. Most people have experienced most of them at one time or another. We are currently interested in finding out how prevalent each symptom is among various groups of people. On the page below, write how frequently you experience each symptom. For all items, use the following scale:

A: Have never or almost never experienced the symptom
B: Less than 3 or 4 times per year
C: Every month or so
D: Every week or so
E: More than once every week

For example, if your eyes tend to water once every week or two, you would answer "D" next to question #1.

___1. Eyes water
___2. Itchy eyes or skin
___3. Ringing in ears
___4. Temporary deafness or hard of hearing
___5. Lump in throat
___6. Choking sensations
___7. Sneezing
___8. Running nose
___9. Congested nose
___10. Bleeding nose
___11. Asthma or wheezing
___12. Coughing
___13. Out of breath
___14. Swollen ankles
___15. Chest pains
___16. Racing heart
___17. Cold hands or feet even in hot weather
___18. Leg cramps
___19. Insomnia or difficulty sleeping
___20. Toothaches
___21. Upset stomach
___22. Indigestion
___23. Heartburn or gas
___24. Abdominal pain
___25. Diarrhea

___26. Constipation
___27. Hemorrhoids
___28. Swollen joints
___29. Stiff or sore muscles
___30. Back pains
___31. Sensitive or tender skin
___32. Face flushes
___33. Tightness in chest
___34. Skin breaks out in rash
___35. Acne or pimples on face
___36. Acne/pimples other than face
___37. Boils
___38. Sweat even in cold weather
___39. Strong reactions to insect bites
___40. Headaches
___41. Feeling pressure in head
___42. Hot flashes
___43. Chills
___44. Dizziness
___45. Feel faint
___46. Numbness or tingling in any part of body
___47. Twitching of eyelid
___48. Twitching other than eyelid
___49. Hands tremble or shake
___50. Stiff joints
___51. Sore muscles
___52. Sore throat
___53. Sunburn
___54. Nausea

Since the beginning of the semester, how many:
_____ Visits have you made to the student health center or private physician for illness
_____ Days have you been sick

APPENDIX B

SMU Health Questionnaire

Place a check in front of every health problem you have had during the last year. Be sure to check every health problem you used to have but now control with medication or treatment:

_____cold or flu
_____diabetes
_____anemia
_____fainting
_____hernia
_____diarrhea
_____hemorrhoids
_____rash
_____appendicitis
_____paralysis
_____ulcer
_____skin cancer
_____sore throat
_____constipation
_____ear ache
_____vomiting
_____asthma
_____emphysema
_____colitis
_____seizures
_____bulimia
_____allergies
_____blackouts
_____depression
_____indigestion
_____severe acne
_____mononucleosis
_____broken bones
_____pregnancy
_____endometriosis(cramps)
_____obesity
_____other health problems; Specify:

_____significant weight gain
_____significant weight loss
_____headache (not migraine)
_____low blood pressure (hypoglycemia)
_____high blood pressure (hypertension)
_____arthritis or rheumatism
_____abdominal or stomach pain
_____gall bladder problems
_____lung or respiratory problems
_____heartbeat irregularity
_____high cholesterol
_____chronic back problem
_____kidney or urinary tract problems
_____eye problem (sty, cataract)
_____thrombosis (blood clots)
_____water retention (bloating)
_____serious dental problems (incl. gums)
_____angina or chest pain
_____migraine headache
_____thyroid problem
_____anorexia nervosa
_____grinding of teeth or TMJ
_____multiple sclerosis
_____breast cancer
_____other cancer
_____benign tumor
_____liver problem
_____sexual problems(impotency,frigidity)
_____venereal disease (incl. herpes)
_____pre-menstrual syndrome
_____other reproductive (cysts, prostate)

How many days during the last year were you hospitalized for each of the following:

surgery_____ childbirth_____ psychological problems_____
injury_____ illness_____ drug/alcohol problems_____

APPENDIX C

Weekly Health Survey Email

Thank you for being in our study! Please hit reply and complete the following short questions by Monday evening at 8 pm.

1. How many bouts of illness did you have in the past week? (If a sickness lasted for more than one day but you consider it to be part of the same illness, please count it once) ____

2. How many times in the last week did you miss a class due to illness (not injury)? _____

3. How many times in the last week did you take over the counter medicine to relieve pain or other symptoms? _____

4. How many times in the last week did you see a doctor because you felt sick (not for an injury or routine check-up)? _____

5. How many *days* in the last week did you feel sick? _____

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